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ABSTRACT

Marginal utility analysis is described in this paper, with zero-base budgeting (ZBB) discussed as an applied example. Some of the theoretical and practical issues surrounding such models are assessed, and the movement for more scientific and rational resource allocation is placed in a larger methodological and philosophical context. The focus of the paper is resource allocation rather than institutional management and planning, even though some of the terms and concepts used could apply to these broader areas. An assessment of marginal utility models as a basis of resource allocation reform is undertaken for both practical administrative and theoretical reasons. Marginal utility analysis has three components: (1) dividing available resources into increments so that assessments and comparisons can be made about increments (or decrements) rather than total resources; (2) assessing the gains or benefits of each increment; and (3) comparing the relative benefits within and across functions. These are discussed, along with overall cost-benefit analysis, economic models, and zero-base budgeting and its alternatives. Sample zero-base budgeting formats used in the state of Georgia are appended. (Author/LBH)

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RESOURCE ALLOCATION REFORMS: ZERO-BASE BUDGETING AND MARGINAL UTILITY ANALYSIS IN HIGHER EDUCATION

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RESOURCE ALLOCATION REFORMS: ZERO-BASE BUDGETING AND MARGINAL UTILITY ANALYSIS IN HIGHER EDUCATION

I. Introduction

Allen Schick, in a now classic article reviewing the history of budgetary reform in the United States, portrays an evolutionary development of public resource allocation driven by an ethos of rationality. From the control oriented object-of-expenditure budgets introduced in the 1920s, to the management oriented performance measures introduced in the late 1930s, to the planning and analysis oriented program budgets of the 1960s, the drive for a more rational system of resource allocation is evident. Indeed, in the culminating stage of this developmental saga, economists' rationalistic models play the central role, e.g.,

> ".... PPB traces its lineage to the attempts of welfare economists to construct a science of finance predicated on the principle of marginal utility. Such a science, it was hoped, would furnish objective criteria for determining the optimal allocation of public funds among competing uses. By appraising the marginal costs and benefits of alternatives, it would be possible to determine which combination of expenditures afforded maximum utility.[1]

Even though Schick is referring to the development of the Planning - Programming - Budgeting (PPB) system developed by the economists of the RAND Corporation and implemented in the federal government in the mid-1960s, one of the building blocks of this particular system -- marginal utility theory -- has been the basis of budgetary reform proposals from V.O. Key's lamentful call for reform in the 1940s to Vern Lewis' proposal in the 1950s to current interest in Zero-Base Budgeting (ZBB).[2] This is not to say that

all elements of these various proposals are virtually the same nor is it to imply any guilt by association. Marginal utility theory does, however, provide a very useful focus for evaluating a stream of historical and current budgetary reform proposals.

Attempts to apply economic models of efficient resource allocation to budgeting for institutions of higher education have resulted in frustration on the part of reformers attempting implementation and skepticism on the part of many institutional level people. The reformers cite institutional resistance, lack of trained personnel, and politics as the principal barriers to implementation while institutional administrators cite the inappropriateness of the model to higher education as well as their inability to develop the data required by the model.

The purposes of this paper are to: (1) describe briefly marginal utility analysis, and ZBB as an applied example; (2) assess some of the theoretical and practical issues surrounding such models; and (3) place the movement for more scientific and rational resource allocation in a larger methodological and philosophical context. The focus of the paper is resource allocation rather than general institutional management and planning, even though some of the terms and concepts used could apply to these broader areas. Although focusing on problematic issues and limitations associated with applying marginal utility theory to higher education resource allocation, the paper is not an attempt to dismiss in any wholesale way the utility of analytic models or other tools of the management sciences.[3]

An assessment of marginal utility models as a basis of resource allocation reform is undertaken for both practical administrative and theoretical reasons. Practically, administrators in higher education must be knowledgable about emerging budgeting and planning techniques and the theories upon which these reforms are based in order to cope with implementation and to understand possible consequences for their institution. Theoretically, a good deal of the research and development work in public sector management, including higher education, is based on the application of economic models such as marginal utility theory. The theoretical principles underlying such microeconomic efficiency theories are appealing to those seeking a more rational system of allocating resources. One has only to read Key, Lewis, or a plethora of more current literature to appreciate the shortcoming of budgetary practices in the public sector. Organizations operating in the private market system have been able to appoximate the data requirements of these microeconomic efficiency models and have as a result become the most common prototype for reformers in the public sector.

II. Marginal Utility Analysis Applied

Research and writing in various disciplines have often focused upon rational decision making -- in the abstract, in private organizations, and in public institutions.[4] Underlying much of this interest is the belief that rational decision making is "good," i.e., "rationality" is seen as a standard which ought to be employed in decision making.

The various interpretations given to the term "rationality" tend either to confuse or severely limit the interested observer. One of the most widely shared interpretations of rational decision, and one that has gained considerable fashion in public management circles, is the utilitarian approach expressed in classical micro-economic theories of efficiency.[5] Much of the literature on resource allocation in higher education adopts this perspective, e.g.,

> "A logical approach to the efficient use of university resources would involve some variant of a theory of constrained choice. Theories of constrained choice can provide techniques to evaluate alternative allocations of limited resources among less limited demands for such resources. .... Classical economic theory provides a rationale for making such a choice. ...Utilities, disutilities, marginal costs and marginal products are all caught up in market processes which adjust and validate the constrained choices of producers and consumers. The classical theory of constrained choice is equally applicable to many other areas where alternatives are matters for administrative decision.[6]

Vern Lewis, one of the early proponents of bringing economic rationality to budgeting in the public sector, repeated the basic economic question posed by V. O. Key a decade earlier: "On what basis shall it be decided to allocate X dollars to Activity A instead of allocating them to Activity B,...?"[7] Lewis' answer to this question is based explicitly on the economic concept of incremental or marginal utility analysis.

Marginal utility analysis has three basic components: (1) dividing available resources into increments so that assessments and comparisons can be made about increments (or decrements) rather than total resources; (2) assessing the gains or benefits of each increment; and (3) comparing the relative benefits within

and across functions.

Dividing resources into increments, the first component of the model, is not just a matter of manageability. Perhaps more importantly, at least from a theoretical point of view, is that such a division is necessary to apply the concept of "marginal utility"--the increase in utility (or satisfaction or benefit) associated with a unit increase in one or some combination of the variables upon which utility is alleged to depend. In many resource allocation decision situations, conditions of diminishing marginal utility may act so as to increase yet not maximize total utility. Increment or marginal analysis therefore becomes the key to assessing and maximizing the total.

Assessing the gains or benefits of each unit of resource increment, the logical second step in the model, is dependent upon being able to identify the outcomes or consequences of each increment (or decrement) and to assign some value or "utility" to outcomes identified. Identification of the consequences of alternatives, often expressed in the form of a payoff matrix in decision theory, is less troublesome than assigning a value or utility to those consequences. The final component of the model, comparing benefits across functions, requires solving the calculus of ranking or ordering--a problem to be discussed shortly.

Applying this model to resource allocation in the public sector, Vern Lewis proposed an "alternative budget system" remarkably similar to Peter Phyrr's Zero-Base Budgeting proposal twenty years later. Lewis' proposal called for administrators of budgetary units to prepare a basic budget estimate--last year's base budget

plus price level increases--and then supplement that request with plans for alternative levels of funding, e.g., 80%, 90%, 110%, 120% of the base estimate. The purpose of requiring assessments of alternative levels of expenditures is to force higher level administrators and legislative review bodies to focus on alternative marginal expenditures in a comprehensive and comparative way.

Phyrr's ZBB scheme, developed for budgetary review of the "soft" staff areas at Texas Instruments Corp. and later as the basis of Governor Jimmy Carter's ZBB thrust in Georgia, provides an excellent example of applied marginal utility analysis in the public sector.[8] Phyrr's zero-base budgeting model basically follows the marginal utility model by proposing that public organizations (1) divide their resources into "decision units," (2) array budget requests in increments, (3) show the impact of funding at different increments and (4) rank the incremental "decision packages" from the foregoing analysis.

In Georgia's application of the Phyrr model, decision units were relatively low in the organization, e.g., the "Community Injury Control" unit in the Emergency Medical Health Division of the Department of Human Resources--a unit of two persons and total state general fund budget of under $25,000 (Fiscal 1977). Decision units therefore totaled over 11,000 in Georgia's ZBB system.

The focus on increments or the margin in the Georgia system is similar to Lewis' alternative budgets proposal. Georgia agencies are required to submit detail on four levels of funding: (1) a minimum level--below last year's base budget; (2) a base

level--base plus cost increases; (3) a workload level--base plus workload increases; and (4) a new or improved level--above base and workload. Sample formats used for each of these levels are attached as Appendix I.

The Phyrr model structures marginal utility analysis into "decision packages"--documents that provide a relatively detailed description of each decision unit and the impact of funding that unit at differing budget levels. Decision packages are suggested to include: (1) the purpose(s) or objective(s) of the decision unit: (2) a description of proposed actions or alternatives; (3) costs and benefits of (2); (4) workload and performance measures; and (5) various levels of effort and benefits associated with each level of effort.

Phyrr's model then, while basically reflecting the philosophy and procedure of marginal utility analysis, attempts to cover almost all of the bases of PPB and performance budgeting by its inclusion of goals, objectives and workload measures. The core of the model, however, is formalized comparisions of alternative expenditures.

III. Some Theoretical Issues

The viability of zero-base budgeting or other forms of microeconomic efficiency models in the management of institutions and systems of higher education is highly dependent upon satisfactory resolution of key theoretical issues. This section discusses briefly four such issues from an agenda that could easily include a dozen: (1) criteria for ordering; (2) cause-effect; (3) substantive vs. procedural rationality; and (4) viability of the

economic or "business" model in nonmarket organizations.

Criteria for Ordering The selection of criteria for ordering alternative expenditure choices is a time-weathered and complex subject. One school of thought, described by Braybrook and Lindblom as the "rational-deductive ideal,"[9] advocates a very complete platonic logic system which would precisely define value postulates upon which policy choices could be made. A complete and ordered system of goals and objectives as criteria for policy decisions is one version of this line of reasoning.

Another school of more quantitatively oriented philosophers and economists has championed Betham's utilitarianism and the notion of a welfare function. Although there are significant divisions within this particular school,[10] most welfare economists rely on some form of utility function to reduce multi-dimensional factual data on decision alternatives into a single index of desirability. Some form of valuation is necessary since facts about policy alternatives do not by themselves suffice to rank or order the alternatives.

For choice to take place in the typical marginal utility analysis model, a unidimensional ranking scheme is necessary--otherwise the analyst becomes the legislator in weighing multiple valuations. By far the most common method of bringing a unidimensional character to marginal comparisons is cost-benefit analysis with its unidimensional dollars derived from market and non-market valuations. Cost-benefit analysis, a modern and applied form of Betham's calculus, forms the basis for making marginal comparisons

among competing claims for public resources. The rational public policy decision then, is one that meets the test of "maximum social gain"[11] whereby the chosen alternative maximizes the excess of social gains over social costs. Indeed, in much of the literature on public finance (public expenditures), cost-benefit analysis is synonymous with and a sine qua non of rational decision making.

Theories in which choice is seen as the function of a single variable have always been popular because of their simplicity. Theoretical simplicity, however, has its own price, as Schumacher points out,

> To press non-economic values into the framework of the economic calculus, economists use the method of cost/benefit analysis. This is generally thought to be an enlightened and progressive development, as it is at least an attempt to take account of costs and benefits which might otherwise be disregarded altogether. In fact, however, it is a procedure by which the higher is reduced to the level of the lower and the priceless is given a price. It can therefore never serve to clarify the situation and lead to an enlightened decision. All it can do is lead to self-deception or the deception of others; for to undertake to measure the immeasurable is absurd and constitutes but an elaborate method of moving from preconceived notions to foregone conclusions;.....[12]

While some may consider Schumacher too radical to take seriously, many others feel uncomfortable with the value judgements inherent in cost-benefit analysis.[13]

How important is the issue that important values are being neglected in cost-benefit analysis? Critics fear misuse, or as Kaplan phrases it, "the law of the instrument:" Give a small boy a hammer, and he will find that everything he encounters needs

pounding.[14] Proponents cite the success of benefit-cost analysis in many areas and its inappropriate application in others.[15] Critics want to limit cost-benefit analysis to narrow areas of policy analysis, i.e., to heed Aristotle's caution that "it is the mark of an educated man not to demand more exactness in the treatment of a subject than the subject allows."[16] Proponents see the need to advance theory, rather than applications, in order to extend conceptualization of benefits and costs to broader areas.[17]

The issue of selecting some measurable criteria is in itself a problem of choice and values. Kaplan and others in the social sciences have generally taken the position that any measure is only a partial measure. Two fundamental problems arise from this position: (1) What aspects of a concept will be measured since no set of measures completely exhausts the meaning of a concept?; and (2) By what process do we establish the linkage between the measure(s) and the more basic concept?[18] The use of economic measures is a choice of selective aspects of a broader policy concept--a choice which this author views as too limiting for many substantive expenditure questions. The second question of linkages leads to the next issue.

Cause-Effect. Wildavsky's terse indictment of PPB and its variants is simply, "..no one knows how to do it." Wildavsky sees one of the principal cognative flaws in the application of economic models to the public policy arena to be our lack of understanding of the myriad of interdependencies of possible variables, of what the variables really are, and of the causal links. "In the

absence of a theory relating to outputs, ...abundant information is not going to enlighten anyone."[19]

The relationship, or lack thereof, between budgetary inputs and educational outcomes in management systems being developed for higher education provides an example of this theoretical gap. Hypothetically, one ought to make resource allocation decisions based on the known or probable impact those incremental budgetary resources will have on the institution's goals, as measured by reasonably valid and reliable outcome criteria and measures. The National Center for Higher Education Management Systems (NCHEMS) has attempted to move toward this ideal by developing a classification structure for budgetary inputs, known as the program classification structure, and a taxonomy of outcome criteria and measures. Hypothetically, higher education policy makers will be able to increase funding in a programmatic budget category, e.g., the "Social and Cultural Development" subprogram of the "Student Services" program budget, feeling confident that the impact of such a funding decision can be captured by an outcome criterion such as "interpersonal participation" and measures as follows:[20]

Social skills, interpersonal participation:

- Average number of memberships per student and/or former student in social, charitable, political, or civic organizations.
- Average number of awards and citations earned per student and/or former student for social contributions.
- Student and/or former student perceptions and evaluations of their interpersonal participation as determined by selected measures.
- Average number of friends and acquaintances reported per student.

Most social scientists, of course, are relatively optimistic about the march of knowledge to fill the obvious gaps in theory and measurement and therefore recommend more emphasis (and money) to research.

> In view of our monumental ignorance, one must ask whether academic planning is possible at all in the strict sense of measuring the means and the ends. The condition of our industry certainly suggests the need for more knowledge about the relation between the resources and technologies employed and the true outcomes in human terms. I see the exploration of these relationships as the primary task of those who would improve rational planning in higher education. Without adequate knowledge in these areas, which will require decades of research, higher education will remain dependent on tradition, intuition, and judgment, for guidance in its decision making.[21]

If Bowen, and many others, are right about the basic research that must precede realization of benefits promised by sophisticated management systems, then are attempts to develop and apply such systems woefully premature? Many of the burgeoning number of policy and evaluation studies at the federal level have fallen prey to Kaplan's "law of the instrument" cited earlier. Indeed one seasoned observer laments the "tireless tinkering with data and programs" and calls for reversion to Lasswell's concept of the policy sciences, i.e.,

> "...the basic emphasis of the policy approach... is upon the fundamental problems of men in society rather than upon the topical issues of the moment."[22]

Perhaps higher education management research efforts ought to be directed toward similar "basic research" rather than product development.

Substantive vs. Procedural Rationality. Noting the utilitarian and positivistic ancestry of most of the literature on rational decision making, Friedland concludes that the literature from this field treats values "solely in terms of the utility associated with particular outcomes or, in terms of the rules for choosing among

alternatives once conditional outcome states have been estimated. All procedural notions of value have been excluded." He goes on to distinguish between substantive and procedural notions of rationality,

> The essential problem is to determine to what extent and under what circumstances "rationality" is a function of how decisions are made, rather than the tangible payoff realized as the result of such decisions.
>
> The choice between a procedural and substantive model of rationality by an organization can have a profound impact upon the way in which it is administered by determining what notions of responsibility will prevail and what skills are required.[23]

The notion of procedural rationality, similar to what Paul Diesing has called "political rationality,"[24] has obvious implications for institutions of higher education. As many writers have pointed out, a university does its best work by creating an environment conducive to intellectual development and the advancement of knowledge. An important part of that environment, some would maintain, is how and by whom decisions are made. To ignore this type of rationality, which in Diesing's view is a higher order of logic, may be to ignore a much more fundamental type of rationality,

> Political rationality is the fundamental kind of reason, because it deals with the preservation and improvement of decision structures, and decision structures are the source of all decisions.[25]

Viability of the "Economic" Model. While many reformers readily admit that applied public expenditure theory is only beginning to emerge and is therefore rather crude, they maintain that in due time refinements will bring us closer to the ideal of

the economic or "business" model referred to in the introduction of this paper. Many observers and lay participants in higher education, such as legislators and trustees, reinforce this view by their support of efforts to bring business management to colleges and universities.

Is the economic model of resource allocation, which is essentially an investment analysis model, the right ideal for higher education and other public sector agencies?

Braybrook and Lindblom explicitly argue that the welfare economics ideal, and by implication the applied microeconomic efficiency models, "are, in most circumstances and most connections, fruitless and unhelpful as ideals."[26] Principal arguments cited for this position are that the ideal is valid only in a small and special world in which all values are marketable goods and services, and that the ideal is simply not practical in the real world of public policy analysis. In the case of the latter argument, they cite the following major reasons for impracticality: (1) the multiplicity of values in the real world; (2) the instability or fluidity of these values; and (3) the conflicts among values and combinations of values.

Others clearly view the "economic model" to be the proper ideal toward which we must patiently strive.

> The.... great danger is that the perfect becomes the enemy of the good, that acknowledged limitations are made the excuse for not abandoning practices which have even more defects, on the curious notion that we should only change over if a perfect product is offered in place of the imperfect one we are already using. Cost-benefit analysis is not the way to perfect truth, but the world is not a perfect place, and I regard it as the

> height of folly to react to the greater (though still incomplete) rigor which cost-benefit analysis requires of us by shrieking "1984" and putting our heads hopefully back into the sand (or the clouds) hoping that things will look better....[27]

Robert Anthony takes a somewhat softer position, recognizing the idiosyncracies of nonprofit organizations; yet he still opts for attempting to approach the economic ideal.[28]

The economic model, with its emphasis upon investment analysis for budgeting of new programs and upon accounting procedures and outcome measures for management control and evaluation, makes unabashed demands for data easily gleaned in the private sector but difficult if not impossible to come by in many areas of the public sector. The principal difference between the two sectors is, of course, the profit measure by which a profit organization operating in the market can evaluate both investment and managerial control issues.[29] The absence of such a measure in the public sector is, in this writer's view, a difference in kind, not degree--especially in those areas of the public sector, such as the most central activities of higher education, where pricing mechanisms are either not feasible or not acceptable public policy.

The economic model applied to higher education could, theoretically, enhance managerial control and resource allocation by relating resource inputs, grouped by institutional activities or programs, to a specific set of educational outputs against which institutional performance could be measured--in the same sense that managerial control in profit-making enterprises is

maintained in terms of costs centers and profit-generating performance. The transactional data system (data generated in day-do-day transactions) of profit organizations, however, is directly relevant to organizational objectives since the units of measurement (dollars) are either the same or a suitable conversion can be made.[30]

Because the central purposes and goals of institutions of higher education are further removed from the day-to-day transactions within such organizations, the neat congruence between goals and transactional data systems found in profit organizations is decoupled in colleges and universities. Again, this decoupling is not merely a matter of degree; it is a difference in kind that would require a quantum leap in theory to connect.

Proprietary institutions of higher education can operate in a market environment and sell their product under full-cost pricing. Under these conditions, such institutions can, through establishment of cost centers, determine which programs are contributing to the profits of the organization and produce only those programs that sell. The question here, of course, is whether such a model for all of higher education will produce the "public goods" desired by society.[31]

Institutions of higher education can, and often do, couple resource input data (costs in dollar terms) with activity data, such as student credit hours, hours worked, etc., or with surrogate outcome data.[32] While some of these cost analyses are useful and interesting, particularly as a basis for further discussion and explication, undue reliance on such measures ignores

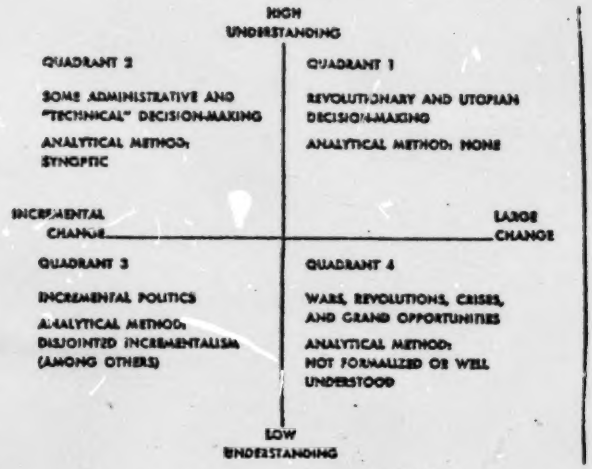
very substantive educational policy questions and may well establish unintended incentives.

Indeed the search for surrogate or proxy outcome measures can take on overtones of Orwell's "doublethink." Anthony and Herzlinger's discussion of output measures in nonprofit organization, for example, includes a paragraph entitled "Inputs as a Measure of Outputs," further elucidated as,

> "Although generally less desirable than a true output measure, inputs are often a better measure of output than no measure at all."[33]

Their example of an activity which may require such a surrogate measure is research--a central activity in any university.

My own view is that the economic model of resource allocation is inappropriate for most of the significant budgetary policy issues facing institutions of higher education. This does not mean that an investment analysis model is totally inappropriate--rather that it is appropriate under certain conditions, i.e., where there is a high degree of understanding as to cause-effect relationships, where outputs can be captured to a very significant degree by some form of pricing, and where the policy alternative chosen represents an incremental rather than a major change in policy. Lindblom suggests the "proper" sphere of economic models to be under "synoptic" in Quadrant 2 in the diagram below.



Source: Braybrooke & Lindblom, op. cit. pg. 78.

The line between quadrants two and three is not self evident, however, and some would argue that the line is shifting downward as more sophisticated analytic models and computational capabilities have been developed.

In a slightly different approach to defining the turf of "economic" analyses, Anthony defines three categories of proposals susceptible to cost-benefit analysis: (1) "economic proposals" similar to capital budgeting proposals in the private sector where it is possible to estimate both costs and benefits in monetary terms, e.g., a proposal to convert the heating plant of a university from oil to coal; (2) "alternative ways of reaching the same objective" where there is a reasonable presumption that each of several alternatives will achieve the desired objective, e.g., in the absence of a judgment as to which teaching technique is educationally superior, the lowest cost technique is perferred; and (3) "equal cost programs" wherein two

competing proposals have similar costs, but one produces more benefits--a conclusion reached without measurement of absolute levels of benefits. A cost-benefit comparison of proposals intended to accomplish very different objectives, e.g., to compare funds to be spent for primary school education with funds to be spent for retraining of unemployed adults, is in Anthony's judgment likely to be worthless and clearly in the domain of Lindblom's quadrant three."[34]

Lindblom's and Anthony's analyses as to the conditions under which the economic model is useful represent preliminary and general attempts to address a very important issue. A more detailed and comprehensive analysis of this issue, based on an understanding of both economic and political theory, seems to me to be an important missing link in the literature of public, and higher educational, management. Much of the existing literature, with the possible exception of some of the material emerging in policy studies' journals, is either too polemic or technical for a balanced and thorough understanding by public managers and policy analysts as to when economic and other types of analytical models are useful.

IV. Some Administrative Issues

Centralization. One of the benefits of ZBB's decision package approach, according to then Governor Carter, is that it "has given me an extremely valuable method by which I can understand what happens deep in a department."[35] Peering deeply into an organization, however, carries with it substantial implications.

Practically, the sheer volume of decision packages in ZBB can overwhelm top level administrators in much the same way as the initial rounds of program memoranda and other documentation did in PPB. Phyrr recognizes this, however, and has proposed a filtering procedure whereby only the lower priority items reach a governor's or other top administrative official's desk. The governor can then presumably select the best of the marginal (in the sense of lower priority) decision packages as available funding allows.

Assuming that the question of volume can in some way be resolved through a suitable selectivity process, the question of the impact of highly disaggragated data upon administrative centralization remains. Review of detailed organizational activities and decisions has a long tradition in fiscal auditing and its more recent variations of performance auditing. Both fiscal and performance audits, however, are ex post facto reviews. ZBB's decision packages, like PPB's program memoranda, operate on a pre-audit basis which provides an opportunity for top administrative or legislative officials to make managerial decisions fairly low in the organizational structure.

Phyrr's model, at least as implemented in Georgia, of highly disaggregated decision units need not, of course, be the only model of applied marginal utility analysis, i.e., decision units could be defined more broadly to avoid peering too deeply. Policy makers, however, often feel more comfortable making resource allocation decisions on specific, concrete items or issues rather than on broad programmatic areas.[36]

Various studies have noted the general tendency of management information systems and systems analysis to centralize decision making.[37] In the evolution of information systems models developed by the National Center for Higher Education Management Systems (NCHEMS), a very definite shift from institutional to statewide and federal models can be seen.

The modus operandi of ZBB could have serious implications for traditional patterns of decision making in higher education not only by enabling but by focusing the attention of the governor, officials in departments of finance, legislators and legislative staff on departmental and even subdepartmental issues.[38] Whether one believes such changes would be a progressive or disasterous step depends upon one's view of procedural rationality. Whether or not such centralization would in fact occur is somewhat conjectural and perhaps the level of interest in the question is proportional to one's concern (or paranoia) over the issue of institutional autonomy.

The Uses and Misuses of ZBB. ZBB, at leat Phyrr's version of it, has been implemented in Georgia and other states and is undergoing implementation in the federal government. Although there is a burgeoning literature on the topic, relatively few objective evaluations have appeared.[39] Minmier and Hermansen's study of the Georgia experience, one of the better detached evaluations so far, concludes that ZBB did not result in any substantial resource reallocation, although it did serve as the basis for a sizable executive branch reorganization.[40] Other uses

of ZBB include its focus on the consequences of funding programs below current service levels, its improvement of budgetary information, and its involvement of more people in the budgetary process.

Many observers, however, are not so kind in their assessment of ZBB. Robert Anthony's recent indictment cites the problem of ranking decision packages, the time required just to read the large number of decision packages, and the lack of attention given to planning and programming.[41] In the annual Brookings Institution review of the federal budget, Robert Hartman cites the following misuses of ZBB: (1) the waste of managerial time and resources; (2) the inappropriateness of the technique for many governmental services where output definition is problematic and where it is difficult to define levels of output; (3) the gamesmanship temptation wherein agencies make reductions unpalatable (e.g., the Department of Interior hypothetical decision to absorb a budget reduction by closing the Washington Monument); and (4) the nearsightness of ZBB's concentration on the upcoming fiscal year at the expense of longer ranger issues.[42]

ZBB does have substantial political appeal, however, in its call to justify existing programs and in its claim to allocate resources more efficiently and effectively. The symbolic value of these claims alone, therefore, may make the use of ZBB politically rewarding.

An Alternative to ZBB. According to Phyrr, ZBB allows top management to simultaneously compare the low and high priorities

of all agencies and rank the alternatives in terms of decreasing benefits to the organization or public sector as a whole. This paragon of economic rationality is an ambitious claim which requires far more theoretical knowledge and practical measures than now available in a public, nonmarket environment.

A much more practical and penetrating approach to ZBB, particularly for institutions of higher education, is some form of program review. Anthony basically takes this position in his call for "zero-base review"--a thorough going review of an agency by outside experts about every five years--instead of zero-base budgeting.[43]

One form such reviews might take is "policy analysis" studies or audits performed by specialized state level executive or legislative staffs. Berdahl's excellent review of the legislative program evaluation function and its relation to the role of various higher education agencies highlights several key concerns associated with this alternative: (1) The tendency of ambitious young staff members to undertake broad scale and intensive review of highly professionalized and technical areas--an ambition which Berdahl believes may lead to their collapse; (2) the failure of these state level agencies to prioritize areas of investigation and select only those where they can do the most good; and (3) the need for higher education to preserve the credibility of its own evaluation function or see such prerogatives gravitate to the state.[44]

Many systems and institutions of higher education already have evaluation processes whereby programmatic areas or degree programs are reviewed, usually through some mode of peer involvement.[45] At a statewide or multicampus level, in-depth reviews of programmatic areas such as schools of education or engineering can serve both planning and evaluation as well as budgetary purposes. Institutional level departmental reviews, particularly at the graduate level, have been developed at many universities and often serve to redirect programmatic efforts.

In order to make these system and institutional zero-base program reviews as effective as possible in pruning deadwood and directing growth, three factors seem to me to be essential: (1) the review should incorporate the best of sound peer review practices; (2) assumptions of resources and other variables should be clearly delineated for the review team; and (3) the results should be used in the budgetary process.

Professional sovereignty and its modus operandi of peer review are under increasing attack for various reasons--many of which are deserved. Indeed some valuable lessons here might be gleaned from the experience of the medical profession.[46]

The long term viability of the academy, including institutional, multicampus and statewide agencies, to judge itself is in part dependent upon its ability to conduct high quality evaluations and then to make tough decisions formulated by these reviews. Z33 or any other budgetary mechanism will not automatically

prune out lower priority programs. Such pruning can take place only, at least in a "rational" sense, in the context of tough programming decisions.[47]

Beyond Advocacy? Many observers of the American budgetary process have characterized it as an adversary or advocative process reflecting our underlying pluralistic political system. Participants play basic budgetary roles as their institutional position prescribes.[48] Successful performance is determined by one's ability to make the best case for one's employing agency.

Attempting to build an objective budgetary review or policy evaluation process within this context may be self-deceiving. Bill Niskanen, an economist and former assistant director for evaluation in the Office of Management and Budget, is pessimistic on the prospects: "I do not personally know of any way to structure an objective review process in an adversary environment."[49] As an example of the difficulties involved, Niskanen cites agencies being asked to perform studies that questioned their fundamental programs and budeaucratic interests and finds it not surprising that "the responses to those requests were usually indefinitely deferred, obscure, or self-serving."

To what extent is objectivity necessary for good budgetary and policy review? Some, like Wildavsky, might argue that it is not as necessary as we might at first think or at least that it emerges from the process. Lack of agency objectivity may well

be counterbalanced, for example, by the case made by resource competitors or by the possible loss of credibility under a tough budget office review. Wildavsky, along with others, has taken the position that analysis is not intended to eliminate advocacy, "but to raise the level of argument among contending interests."[50] More informed decisions will therefore be made as our ability to analyze complex issues rises.

The ideals of rationality and objectivity, however, remain as a standard toward which those with faith in reason slowly but steadily tread. George Weathersby's address to the 1976 NCHEMS National Assembly is an interesting mixture of incremental and rational themes--recognition of the limitations of rationalistic decision models, lamentation of the foibles of political decision making, and an expression of belief that succeeding "generations" of decision makers in higher education who have been trained to think in fundamentally different ways from political incrementalism will gradually transform the decision making process from a level of particle physics to quantum physics.[51] This new era of thought for Weathersby is policy analysis--in a broader sense of the term than benefit-cost analysis or formal systems analysis.

Policy analysis in this broader sense is systematic thinking. Hence Weathersby calls for a research emphasis on how individuals think and what information they use in making decisions rather than on techniques of producing new information. Personally I am not optimistic about our ability to discover fundamentally different ways of thinking or making decisions. I do believe, however, that systematic analysis--or in Anthony's terms, "Benefit/Cost

as a Way of Thinking"--can improve resource allocation in the public sector. As Charles Schultze has pointed out, "systematic analysis does not have to be and is not coextensive with quantitative analysis."[52] Systematic analysis, then, will hopefully "raise the level of argument" in what is basically an advocacy process, but it will not radically transform resource allocation decisions to some millennial state or to what Wildavsky has termed "a simultaneous equation for the society in the sky."

V. Concluding Comments

The Myopia of Ideology. Deeply rooted in American social philosophy is the concept that science can be applied as a remedy to all problems. Indeed, this belief had dramatic impact upon American institutions of higher education in the last 19th and early 20th centuries.[54] Many reform groups pushing some panacea at that time and now were and are perceived as bound to ideology. But social scientists, particularly those in disciplines closest to the natural sciences, were and are now somehow ideology free. The neutrality of empiricism, an idea now deeply rooted in American academic thought, reinforces the notion that scientific inquiry into social phenomena is ideology free.

A good deal of the recent management movement in the public sector and in higher education follows this legacy of neutrality and scientific appearance--an appearance of highly quantified, value free rationality at work. The relatively recent emphasis on analytic techniques--primarily economic techniques--in the public sector has been led in large part by those who hold a

certain worldview or ideology. Formal analyses, the hallmark of economic ideologists, often give us the feeling of orderliness and rationality--a feeling that can come to be highly valued. Indeed, most administrators probably feel more comfortable with order than chaos--or at least high degrees of ambiguity.

Fred Kramer, in a paper entitled, "Policy Analysis as Ideology," stresses the importance of being able to,

> "...see that the scientific results of analysis are in fact the result of an ideology. This ideology leads the analyst to direct his inquiry to certain sources and ignore others or alter the weights of various factors according to his perceptions of reality as reflected in his models of reality."[54]

Ideology as Kramer uses it and as it is used here refers to a fairly thorough, integrated value system or view of the world, i.e.,

> An ideology is a value or belief system that is accepted as fact or truth by some group. It is composed of sets of attitudes toward the various institutions and processes of society. It provides the believer with a picture of the world both as it is and as it should be, and, in so doing, it organizes the tremendous complexity of the world into something fairly simple and understandable.[55]

Ideology, then, is simply a different view or perspective of the world which often leads to different policy conclusions even from the same facts. Jim Jarrett of the University of California at Berkeley has taken a somewhat similar position using Jung's four cognative functional types or styles to categorize how an individual's "temperamental bias" affects one's values and perception of reality.[56]

This is not to suggest that every disagreement on policy is based on differing ideologies. When people look for facts using

different methodologies, however, the differences may well be grounded in ideology.

The principal implication, at least for purposes of this paper, of viewing analysis as ideology is that analysts, whose every intent is to provide honest, objective analyses, may be so bound by their own methods and disciplinary perspective that they ignore other important values.[57]

Ideological Balance. Howard Bowen's cogent and insightful address two years ago at AAHE sets a very sensible tone and direction amidst the polemics of differing ideologies.[58] Hopefully this author's view of Bowen's position as "reasonable" reflects a balance rather than a congruence of ideologies. Bowen's call for a full and balanced consideration of all the variables in managing institutions of higher education, rather than an arbitrary or unwarranted exclusion of nonquantifiable variables, is not dissimilar to the position taken by Aaron Wildavsky, one of the principal polemicists in the debate over the viability of economic models of rationality.[59]

Borrowing from philospher William Connolly, Kramer suggests finding ways to achieve greater balance through implementation of the notion of "theoretical self-consciousness"--an attempt to understand fully one's perspective of reality and to explore "sympathetically alternative ways to comprehend" the analytic problems one faces.[60] As a practical means of implementing this notion of broadening one's perspective or ideology, Kramer suggests liberal sabbatical leave policies for policy analysts. In addition to the continuing education of analysts and consumers of

analytic studies, collegiate preparation programs in administration, policy analysis and related areas might make more deliberate attempts to broaden the perspectives of their students by exposing them to other points of view in some depth and by making clear the assumptions, and implications of those assumptions, of the particular methodological approach taken.[61]

Perhaps structural, in addition to training, devices could also be adopted by agencies to increase the possibility of intellectual pluralism in budgetary or policy evaluations. Wildavsky and Nienaber, in a study of budgeting and evaluation processes in federal recreation programs in the late 1960s, cite an example of structured intellectual pluralism in the budget review procedures of the U.S. Forest Service. In the case cited, budget estimates and analyses are prepared by three different groups--the operating divisions, the PPB staff, and an in-house study group--to provide a formalized debate technique.[62] Whether this type of redundancy is an intellectual luxury or is in itself "cost-effective" is open to question.

The call for balance, then, is a call to strengthen the present advocative nature of our political and bureaucratic system by broadening individual ideologies thereby making room for and legitimizing of varied types of analyses as well as perhaps easing the pain often associated with consensus. This is not to advocate purging ideology from budget reforms or policy analysis. Mitigating the blinders of ideology and taking off the mask of objectivity that often covers the face of analytic work, however, seem to me

to be positive steps toward the goals of rationality and responsibility that Norton Long referred to almost a quarter of a century ago.

> An organization in its routines and its personnel--their training and values, professional and political--can be so structured as to maximize the likelihood that decisions will be made as a result of full consideration of the relevant facts, hypotheses, and values involved.[63]

Context of the "Management Movement." The impetus for improved management systems in higher education, and other public agencies for that matter, is based on a variety of factors, two of which are: (1) a belief that higher education is susceptible to the theories and methods of "management science;" and (2) a strategy on the part of some higher educationists to demonstrate accountability and sound management thereby raising higher education's public credibility. Most of this paper has focused on the former factor; some brief concluding comments are now offered as to the latter.

Stephen Bailey has noted that the concern over higher educations' objectives as well as its efficiency is only an outward manifestation of a more basic issue,

> Only the woefully naive contend that the real problem is efficiency--that government bureaus and universities will receive votes of confidence in new dollars when they can master PPB and related cost-benefit techniques and thereby can be held accountable. The basic issue is political and psychological--a growing belief that what government bureaus and universities do is not worth the cost, that governments reduce freedom too much and that universities foster too much license. The absence of sophisticated systems of accountablity simply adds to the already substantive frustration of politicians and publics.[64]

Cheit bases his conclusion that the use of management systems will not rebut presumptions of inefficiency and lead to greater support on three grounds: (1) once the accusation is made, accused institutions can get little credit for taking steps to increase efficiency; (2) public agencies that have won fiscal confidence have done so by means other than claiming to be efficient; and (3) that unfavorable attitudes toward higher education are based primarily on questions of purpose rather than questions of efficiency.[65]

Neither Cheit nor this author is arguing to abandon concerns for efficiency or use of better management systems in higher education. There are areas of institutional management, e.g., many accounting and business operations, contract and grant management, student records, financial forecasting, faculty age distribution, and retention models, etc., where improved systems are useful for management, planning and resource allocation. Indeed, concern for efficiency, which is increasingly manifest at institutional and state levels, is a fundamental prerequisite for effecting changes in more systematic management. An equally important prerequisite for efficiency, however, is knowledge of how to be efficient--both in the more limited sense of selective institutional operations just cited and in the broader sense of purposes that Bailey mentions.

I believe the larger issue of confidence in institutions of higher education will never be resolved in any final sense because it is a recurring dilemma of any semi-autonomous governmental body.

Restoration of higher degrees of confidence at any one point in time requires actions appropriate to the times and cultural context. In these times, higher education seems in great need of sorting out the purposes and functions of institutions of higher education, in reformulating differentiation among types of institutions, and in revitalizing its ability to judge and manage itself, thereby preserving some measure of professional sovereignty and vitality.

FOOTNOTES

[1]Allen Schick, "The Road to PPB: The Stages of Budget Reform," The Public Administration Review, 26, No. 4 (December 1966), pp. 243-258.

[2]V.O. Key, "The Lack of a Budgetary Theory," American Political Science Review, 34 (1940), pp. 1137-1144; Vern B. Lewis, "Toward a Theory of Budgeting," Public Administrative Review, Winter 1952, pp. 42-54; Peter A. Pyhrr, Zero-Base Budgeting, New York: John Wiley & Sons, Inc., 1973.

[3]A useful volume on such analytic models is David S.P. Hopkins and Roger G. Schroeder, Applying Analytic Methods to Planning and Management, New Directions for Institutional Research, No. 13, San Francisco: Jossey-Bass, Inc., 1977.

[4]For Example see, Edward I. Friedland, Introduction to the Concept of Rationality in Political Science, Morristown, N.J.: General Learning Press, 1974; Carl J. Friedrich, ed., Rational Decision, New York: Atherton Press, 1964; Paul Diesing, Reason in Society, Urbana: University of Illinois Press, 1962.

[5]See for example Yehezkel Dror, Public Policymaking Reexamined, Scranton, Pa.: Chandler, 1968. Dror outlines six phases of a rational decision making model as follows: (1) establish a complete set of operational goals, with relative weights allocated to the different degrees to which each may be achieved; (2) establish a complete inventory of other values and resources with relative weights; (3) prepare a complete set of alternative policies open to the policy maker; (4) prepare a complete set of valid predictions of the costs and benefits of each alternative, including the extent to which each alternative will achieve the various operational goals, consume resources and realize or impair other values; (5) calculate the net expectation for each alternative by multiplying the probability of each benefit and costs for each alternative by the utility of each and calculating the net benefit (or cost) in utility units; and (6) compare the net expectations and identify the alternative (or alternatives if two or more are equally good) with the highest net expectation (pg. 132).

[6]Barry Williams, Planning for Effective Resource Allocation in Universities, Washington, D.C.: American Council on Education, 1966, pp. 2-3. For a model which attempts to overcome some of the problems associated with "the classical theory of constrained choice," see Kamal el-Dien Said, A Budgeting Model For An Institution of Higher Education, Austin, Texas: Bureau of Business Research, University of Texas, 1974.

[7]Lewis, op. cit., pg. 42.

[8]Phyrr, op. cit.; Peter A. Phyrr, "Zero-Base Budgeting," Harvard Business Review, November/December, 1970, pp. 111-121; Peter A. Phyrr, "The Zero-Base Approach to Government Budgeting," Public Administration Review, January/February 1977, pp. 1-8; Phyrr's version of ZBB is not what some purists would call ZBB. For an evaluation of a major attempt to implement another model of ZBB in the Department of Agriculture in the 1960s, see Aaron Wildavsky, Budgeting: A Comparative Theory of Budgetary Processes, Boston: Little, Brown and Company, 1975, chapter 14.

[9]David Braybrooke and Charles E. Lindblom, A Strategy of Decision: Policy Evaluation as a Social Process, New York: The Free Press, 1963.

[10]Braybrooke and Lindblom base their social or "disjointed incrementalism" strategy on a brand of revitalized Utilitarianism suggested largely by Kenneth Arrow (Social Choice and Individual Values, New York: John Wiley & Sons, 1951).

[11]Robert H. Haveman, The Economics of the Public Sector, Santa Barbara: John Wiley & Sons, 1976, pp. 53-62.

[12]E. F. Schumacher, Small Is Beautiful: Economics as if People Mattered, New York: Harper & Row, Perennial Library edition, 1975, pp. 45-46.

[13]See for example, Ida R. Hoos, Systems Analysis in Public Policy, Berkeley: University of California Press, 1972. Hoos cites Roland N. McKean's RAND research study of water resources--a sort of Bible for cost-effectiveness calculators--as one of the most normative treatises in print (see pg. 131). See also Leonard Merewitz and Stephen H. Sosnick, The Budget's New Clothes: A Critique of Planning - Programming-Budgeting and Benefit-Cost Analysis, Chicago: Markham, 1971; Aaron Wildavsky, "The Political Economy of Efficiency: Cost-Benefit Analysis, Systems Analysis and Program Budgeting," Public Administration Review, December 1966, pp. 292-310; Stephen K. Bailey, "The Efficiency Cultists," Change, June 1973, pp. 8-9; Harold L. Enarson, "University or Knowledge Factory?" Chronicle of Higher Education, July 18, 1973, p. 16.

[14]Abraham Kaplan, "Some Limitations on Rationality," in Carl J. Friedrich, ed., op. cit., p. 56.

[15]See for example, Peter O. Steiner, Public Expenditure Budgeting, Washington, D.C.: The Brookings Institution, 1969; also Alan Williams, "Cost-Benefit Analysis: Bastard Science? and/or Insidious Poison in the Body Politik?" Journal of Public Economics, Vol 1, no. 2, Aug. 1972, pp. 199-225.

[16]Quoted in Kaplan, op. cit., p. 62.

[17]Steiner, op. cit., pp. 90-91.

[18]Ronald Johnson, "A Taxonomy of Measurement Objectives for Policy Impact Analysis," Policy Studies Journal, Winter 1974, pp. 201-208.

[19]Aaron Wildavsky, Politics of the Budgetary Process, 2nd Edition Boston: Little, Brown & Co., 1974, p. 200.

[20]Taken from Glenn K. Miyataki and Maureen L. Byers, Academic Unit Planning and Management, Technical Report 75, January 1976, Boulder, Colorado: The National Center for Higher Education Management Systems.

[21]Howard R. Bowen, "Where Numbers Fail," in Dyckman W. Vermilye, ed., Individualizing the System, San Francisco: Jossey-Bass, p. 12; also Howard R. Bowen, "Outcome Data and Educational Decision-Making," in Carl R. Adams, ed., Appraising Information Needs of Decision Makers, New Directions for Institutional Research No. 15, San Francisco: Jossey-Bass, 1977, pp. 43-55.

[22]Quoted in, Allen Schick, "Beyond Analysis," Public Administration Review, May/June 1977, p. 261.

[23]Friedland, op. cit. p. 7.

[24]Paul Diesing, Reason in Society, Urbana: University of Illinois Press, 1962. For an attempt to operationalize the notion of political rationality into an analytic instrument, see Paul H. Conn, David B. Meltz and Charles Press, "The Concept of Political Rationality," Polity, Winter 1973, pp. 223-239.

[25]Diesing, op. cit., p. 198.

[26]Braybrook and Lindblom, op. cit., p. 16.

[27]Alan Williams, "Cost-benefit Analysis," op. cit., pp. 223-224.

[28]Robert N. Anthony and Regina E. Herzlinger, Management Control in Nonprofit Organizations, Homewood, Illinois: Richard D. Irwin, Inc., 1975, p. 56, pp. 337-348.

[29]See Robert Anthony and Regina Herzlinger, op. cit., chapter 3 for a very useful discussion of the differences.

[30]Ralph Purves and Lyman A. Glenny, State Budgeting for Higher Education: Information Systems and Technical Analyses, Berkeley: Center for Research and Development in Higher Education, University of California, 1976, pp. 169-171.

[31]For a discussion of full-cost pricing possibilities in institutions of higher education, see Anthony and Hertzlinger, op. cit., pp. 157-180; see also, W. Lee Hansen and Burton A. Weisbrod, "A New Approach to Higher Education Finance," in M. D. Orwig, ed., Financing Higher Education, Iowa City: American College Testing Program, 1971, pp. 117-142.

[32]For a recent example of attempts to construct various outcome and impact measures, see Marvin W. Peterson, et. al., "State-level Performance Budgeting," in John K. Folger, ed., Increasing the Public Accountability of Higher Education, New Directions for Institutional Research, no. 16, San Francisco: Jossey-Bass, 1977, pp. 1-34, especially pp. 3-6.

[33]Anthony and Hertzlinger, op. cit., p. 153.

[34]Anthony and Herzlinger, op. cit., pp. 192-194.

[35]Quoted in George S. Minmier and Roger H. Hermansen, "A Look at Zero-Base Budgeting--The Georgia Experience," Atlanta Economic Review, vol. 26, no. 4, July/August 1976, p. 6.

[36]See for example, James D. Barber, Power in Committees, Chicago: Rand McNally, 1966; also Richard F. Fenno, Jr., "The Impact of PPBS on the Congressional Appropriations Process," in Robert Chartrand, et. al., eds., Information Support, Program Budgeting and the Congress, New York: Spartan Books, 1968; James E. Jernberg, "Information Change and Congressional Behavior," Journal of Politics, Aug 1969, pp. 722-740.

[37]Carl R. Adams, "How Managers View Information Systems," Decision Sciences, vol. 6, no. 2, 1975, pp. 337-345; Ida R. Hoos, op. cit., pp. 102, 170-172.

[38]David Tyack has argued that the movement to professionalize educational management in the late 19th and early 20th centuries was motivated in large part by an agenda to shift control of the schools away from the local level. A coalition of the social elite and distinguished academics succeeded in bringing about this change. The ostensible basis for the

reform was the desirability of making education and educational management more scientific. See David Tyack, The One Best System: A History of American Urban Education, Cambridge: Harvard University Press, 1974; for a discussion of the political character of information in a higher education context, see Frank A. Schmidtlein, "Information Systems and Concepts of Governance," in Carl R. Adams, ed., Appraising Information Needs of Decision Makers, New Directions for Institutional Research, No. 15, San Francisco: Jossey-Bass, 1977, pp. 29-42.

[39]See for example, Michael J. Scheiring, "Zero-Base Budgeting in New Jersey," State Government, Summer 1976, pp. 174-179; John D. LaFaver, "Zero-Base Budgeting in New Mexico," State Government, Spring 1974; For a good review of ZBB in Texas, Georgia and New Jersey, see Allen Schick, "Zero-Base Budgeting and Sunset: Redundancy or Symbiosis," The Bureaucrat, Spring 1977, pp. 12-32. Several other articles in this issue of The Bureaucrat cover many of the basics of ZBB.

[40]George S. Minmier and Roger H. Hermansen, "A Look at Zero-Base Budgeting--The Georgia Experience," Atlanta Economic Review, July/August 1976, pp. 5-12.

[41]Robert N. Anthony, "Zero-Base Budgeting is a Fraud," Wall Street Journal, April 27, 1977; for a congressional view of a pilot ZBB attempt, see Arlen J. Large, "Applying Zero-Base Budgeting," Wall Street Journal, May 24, 1977.

[42]Robert W. Hartman, "Budget Prospects and Process," in Joseph A. Pechman, ed., Setting National Priorities: The 1978 Budget, Washington, D.C.: The Brookings Institution, 1977, pp. 355-389; also James Q. Wilson, "Zero-Base Budgeting Comes to Washington," The Alternative: An American Spectator, vol. 10, Feb. 1977, p. 5.

[43]"Zero-Base Budgeting Is a Fraud," op. cit.

[44]Robert O. Berdahl, "Legislative Program Evaluation," in John K. Folger, ed., Increasing the Public Accountability of Higher Education, New Direction for Institutional Research No. 16, San Francisco: Jossey-Bass, 1977, pp. 35-65.

[45]See for example, Robert J. Barak, "Program Reviews by Statewide Higher Education Agencies," in John K. Folger, ed., Ibid. pp. 67-90.

[46]See Paul Starr, "Medicine and the Waning of Professional Sovereignty," Daedalus, Winter 1978, pp. 175-193.

[47] See Dennis Farney, "Budget: Neither Fish nor Fowl," Wall Street Journal, January 24, 1978, p. 18, for a very brief assessment of President Carter's ZBB in this context.

[48] See for example Thomas J. Anton, "Roles and Symbols in the Determination of State Expenditures," Midwest Journal of Political Science, February 1967, pp. 27-43.

[49] William A. Niskanen, "Why New Methods of Budgetary Choices? Administrative Aspects," Public Administration Review, March/April 1972, p. 157.

[50] "Rescuing Policy Analysis from PPB," p. 190.

[51] George B. Weathersby, "The Potentials of Analytic Approaches to Educational Planning and Decision Making," in William Johnson, ed., Proceedings of the 1976 National Assembly. Boulder: National Center for Higher Education Management Systems, 1976, pp. 97-106.

[52] As quoted in Anthony and Herzlinger, op. cit. p. 189.

[53] Walter P. Metzger, Academic Freedom in the Age of the University, New York: Columbia University Press, 1955.

[54] Fred A. Kramer, "Policy Analysis as Ideology," paper presented at the National Conference on Public Administration, American Society for Public Administration, Syracuse, New York, May 6, 1974, pp. 1-2.

[55] Lyman T. Sargent, Contemporary Political Ideologies, Homewood, Ill.: The Dorsey Press, 1972, p. 1.

[56] James [illegible] "What Passes for Moral?", paper delivered at the University of Utah, January 12, 1978.

[57] Cameron Fincher examines the differing forms and styles of legal, economic, and technological notions of rationality in higher education, "On the Rational Solution of Dominent Issues in Higher Education," Journal of Higher Education, Sept./Oct. 1975, pp. 491-505.

[58] Howard R. Bowen, "Where Numbers Fail," in Dyckman W. Vermilye (ed.) Individualizing the System, San Francisco: Jossey-Bass, 1976, pp. 8-17

[59] See for example, Politics of the Budgetary Process, Second Edition, Boston: Little, Brown, 1974, p. 194; also "Rescuing Policy Analysis from PPBS," Public Administration Review, March/April 1969, pp. 189-202.

[60]Kramer, op. cit., pp. 11-13; William E. Connolly, "Theoretical Self-Consciousness," Polity, vol. VI, no. 1, Fall 1973, pp. 3-35.

[61]A study using multiple theoretical perspectives is Graham T. Allison, Essence of Decision, Boston: Little, Brown & Co., 1971; also, Kathleen Archibald, "Three Views of the Experts Role in Policy Making: Systems Analysis, Incrementalism, and the Clinical Approach," Policy Sciences, vol 1, 1970, pp. 73-86. For an interesting assessment of the training of policy analysts, see Allen Schick, "Beyond Analysis" Public Administration Review, May/June 1977, pp. 258-263.

[62]Jeanne Nienaber and Aaron Wildavsky, The Budgeting and Evaluation of Federal Recreation Programs, New York: Basic Books, 1973, pp. 91-163.

[63]Norton E. Long, "Public Policy and Administration: The Goals of Rationality and Responsibility," Public Administration Review, Winter 1954, p. 26.

[64]Stephen K. Bailey, "A comparision of the University with a Government Bureau," in James A. Perkins, ed., The University as an Organization, A Report for the Carnegie Commission on Higher Education, New York: McGraw-Hill, 1974, p. 133.

[65]Earl F. Cheit, "The Management Systems Challenge: How to Be Academic Though Systematic, " in John F. Hughes, ed., Education and the State, Washington, D.C.: American Council on Education, 1975, pp. 161-162.

APPENDIX I

SAMPLE ZERO-BASE BUDGETING FORMATS
USED IN THE STATE OF GEORGIA

FISCAL YEAR 1977

DECISION PACKAGE – MINIMUM LEVEL

OPB-BUDGET-30

F. Y. 1977

ZERO-BASE BUDGET REQUEST

DECISION PACKAGE – MINIMUM LEVEL

OPB- Budget -30 (Rev. 6-75)

Human Resources (Department) | Community Injury Control (Activity) | Emergency Medical Health (Function)

Describe the Function in terms of its objective County and City Medical Centers are charged to meet emergency situations such as sudden illness, injury, natural or man-made disasters, and poison cases. The centers do not coordinate their efforts across county and city lines nor do they have exposure to the latest techniques and equipment in the emergency medical field. Some centers are highly successful due to a special innovation that other centers do not share.

Describe the Function in terms of service provided in F. Y. 1976 Utilize a central staff to conduct medical emergency courses around the State to monitor the operations of the Injury Control Program. The courses will provide instruction to the centers on the latest medical emergency techniques and methods. The Base Level provides service for the 100 most populated counties by conducting one medical emergency course at each.

Explain the Minimum Level of Service this Package provides Two positions and expenses to coordinate, develop, and conduct a medical emergency course in the 75 largest medical centers in the State. Two persons are required to conduct a course in each center and two persons can cover 75 medical centers annually.

Explain the Impact of terminating the Service now provided that this Minimum Level Excludes

One position and related expenses are deleted in the minimum level package. Approximately 25 medical centers will not have a medical emergency course in F.Y. 1977 that did have one in F.Y. 1976. Each excluded center would have to develop its own medical emergency plan. Some excluded centers would not choose to do so and an emergency situation in the area served by the center would not be met with the same efficienty as before.

Quantitative Measures (Effectiveness, Workload, Efficiency)	F. Y. 1976 Function	F. Y. 1977 Minimum Level
Different Medical Centers Aided	100	75
Medical Emergency Courses conducted	100	75
Cost Per Course/Total funds	$445	$352
Cost Per Course/State funds	$245	$165

Positions This Package 2	Function F.Y.76	This Pkg. F.Y. 77	Cum%
A. TOTAL PERSONAL SERVICES	25,624	17,686	69
1. Motor Vehicle Expenses and Repairs	900	600	
2. Supplies and Materials	1,900	1,200	
3. Repairs and Maintenance	500	300	
4. Communications	400	280	
5. Power, Water, Natural Gas	250	200	
6. Rents	275	275	
7. Insurance and Bonding			
8. Workmen's Comp. and Indemnities			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	132	88	
13. Other Operating Expenses	450	206	
14. Extraordinary Expenses			
B.REG. OPERATING EXPENSES(Add 1-14)	4,805	3,147	65
C. TRAVEL	800	550	69
D. MOTOR VEHICLE EQUIP. PURCH.	4,680		
E. PUBLICATIONS AND PRINTING	1,350	1,000	74
F. EQUIPMENT PURCHASES	750		
G. PER DIEM AND FEES	2,000	1,500	75
H. COMPUTER CHARGES	2,900	2,000	69
I. OTHER CONTRACTUAL EXPENSE	1,600	550	34
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY			
M. LIST OTHER OBJECTS:			
TOTAL EXPENDITURES (Add A-M)	44,509	26,433	59
FEDERAL FUNDS	16,000	10,000	63
OTHER FUNDS	4,000	4,000	100
STATE GENERAL FUNDS	24,509	12,433	51

Package Name: Emergency Medical Health Package 1 of 4

Prepared By: John Smith Activity Rank 4

DECISION PACKAGE – BASE LEVEL

OPB-BUDGET-31

F. Y. 1977

ZERO-BASE BUDGET REQUEST

DECISION PACKAGE – BASE LEVEL

OPB- Budget - 31
(Rev. 6-75)

Human Resources (Department) | Community Injury Control (Activity) | Emergency Medical Health (Function)

Describe the Function in terms of its objective County and City Medical Centers are charged to meet emergency situations such as sudden illness, injury, natural or man-made disasters, and poison cases. The centers do not coordinate their efforts across county and city lines nor do they have exposure to the latest techniques and equipment in the emergency medical field. Some centers are highly successful due to a special innovation that other centers do not share.

Describe the Function in terms of service provided in F. Y. 1976 (Base Level)
Utilize a central staff to conduct medical emergency courses around the State to monitor the operations of the Injury Control Program. The courses will provide instruction to the centers on the latest medical emergency techniques and methods. The Base Level provides service for the 100 most populated counties by conducting one medical emergency course at each.

Explain the Cost Increase or Decrease in the Base Level over F. Y. 1976
Personal Services – Within-grade increases and annualization of a part-year position
Regular Operating Expenses – Primarily due to rental contract increase for office space.
Travel – Increase in rate from 10 cents to 12 cents per mile.
M. V. Equipment Purchases – Replacement vehicle.
Equipment Purchases – 3 pocket calculators in addition to replacement of office equipment.

Quantitative Measures (Effectiveness, Workload, Efficiency)	F. Y. 1976 Function	F. Y. 1977 Base Level
Different Medical Centers Aided	100	100
Medical Emergency Courses conducted	100	100
Cost Per Course/Total funds	$445	$478
Cost Per Course/State funds	$245	$278

Positions This Package ____ **	Function F.Y.76	This Pkg. F.Y. 77	Cum%
A. TOTAL PERSONAL SERVICES	25,624	9,276	105
1. Motor Vehicle Expenses and Repairs	900	326	
2. Supplies and Materials	1,900	700	
3. Repairs and Maintenance	500	200	
4. Communications	400	176	
5. Power, Water, Natural Gas	250	98	
6. Rents *	273	77	
7. Insurance and Bonding			
8. Workmen's Comp. and Indemnities			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	132	44	
13. Other Operating Expenses	450	244	
14. Extraordinary Expenses			
B.REG. OPERATING EXPENSES(Add 1-14)	4,805	1,865	104
C. TRAVEL	800	350	112
D. MOTOR VEHICLE EQUIP. PURCH. *	4,680	5,112	109
E. PUBLICATIONS AND PRINTING	1,350	500	111
F. EQUIPMENT PURCHASES *	750	1,550	206
G. PER DIEM AND FEES *	2,000	750	112
H. COMPUTER CHARGES *	2,900	900	100
I. OTHER CONTRACTUAL EXPENSE *	1,600	1,050	100
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY			
M. LIST OTHER OBJECTS:			
TOTAL EXPENDITURES (Add A - M)	44,509	21,353	107
FEDERAL FUNDS **	16,000	6,000	100
OTHER FUNDS **	4,000		100
STATE GENERAL FUNDS	24,509	15,353	113

Package Name: Emergency Medical Health Package 2 of 4

Prepared By: John Smith Activity Rank 7

* Attach detailed schedule for F. Y. 1977 Base Level (Including Minimum Level) funds requested.
** Detailed schedule for the Base Level is to be developed at the Activity Level.

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DECISION PACKAGE – WORKLOAD

OPB-BUDGET-32

F. Y. 1977

OPB-Budget - 32
(Rev. 6-75)

ZERO-BASE BUDGET REQUEST
DECISION PACKAGE – WORKLOAD

Human Resources — Department
Community Injury Control — Activity
Emergency Medical Health — Function

Describe the Function in terms of its objective County and City Medical Centers are charged to meet emergency situations such as sudden illness, injury, natural or man-made disasters, and poison cases. The centers do not coordinate their efforts across county and city lines nor do they have exposure to the latest techniques and equipment in the emergency medical field. Some centers are highly successful due to a special innovation that other centers do not share

Describe the Function in terms of service provided in F. Y. 1976 Utilize a central staff to conduct medical emergency courses around the State to monitor the operations of the Injury Control Program. The courses will provide instruction to the centers on the latest medical emergency techniques and methods. The Base-Level provides service for the 100 most populated counties by conducting one medical emergency course at each.

Explain the Workload increase in terms of service provided above the Base Level Conduct a medical emergency course in each of the 63 centers not covered in the State. Every center in the State would receive one course annually. This additional workload is demanded by the centers not now being served.

Explain the Workload Cost Over the Base Level
Personal Services – Two new positions, including fringes, less one month delayed hiring factor.
Related Expenses – To cover 63 additional centers, the new positions will need additional expenses and office space renovations.
Computer Charges – Expansion of the system to add 63 centers. Federal funds are available to help cover the additional centers.

Quantitative Measures (Effectiveness, Workload, Efficiency)	F. Y. 1976 Function	F. Y. 1977 Base-Level	F. Y. 1977 Cumulative
Different Medical Centers Aided	100	100	163
Medical Emergency Courses conduc.	100	100	163
Cost per Course/Total funds	$445	$478	$415
Cost per Course/State funds	$245	$278	$250

Positions This Package 2

	Function F.Y. 76	This Pkg. F.Y. 77	Cum%
A. TOTAL PERSONAL SERVICES *	25,624	15,810	166
1. Motor Vehicle Expenses and Repairs	900	150	
2. Supplies and Materials	1,900	600	
3. Repairs and Maintenance	500	100	
4. Communications	400	50	
5. Power, Water, Natural Gas	250		
6. Rents *	273		
7. Insurance and Bonding			
8. Workmen's Comp. and Indemnities			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	132	88	
13. Other Operating Expenses	450		
14. Extraordinary Expenses			
B. REG. OPERATING EXPENSES(Add 1-14)	4,505	968	124
C. TRAVEL	800	300	150
D. MOTOR VEHICLE EQUIP. PURCH. *	4,630		109
E. PUBLICATIONS AND PRINTING	1,350	250	129
F. EQUIPMENT PURCHASES *	750	100	220
G. PER DIEM AND FEES *	2,000		112
H. COMPUTER CHARGES *	2,900	300	110
I. OTHER CONTRACTUAL EXPENSES *	1,600	200	112
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY *		2,000	
M. LIST OTHER OBJECTS:			
TOTAL EXPENDITURES (Add A-M)	44,509	19,948	152
FEDERAL FUNDS *	16,000	7,000	141
OTHER FUNDS *	4,000		100
STATE GENERAL FUNDS	24,509	12,948	166

* Attach detailed schedule for F. Y. 1977 Workload funds requested in this package.

Package Name: Emergency Medical Health Package 3 of 4
Prepared By: John Smith Activity Rank 10

DECISION PACKAGE – NEW OR IMPROVED

OPB-BUDGET-33

F. Y. 1977

OPB-Budget - 33
(Rev. 6-75)

ZERO-BASE BUDGET REQUEST
DECISION PACKAGE – NEW OR IMPROVED

Human Resources	Community Injury Control	Emergency Medical Health
Department	Activity	Function

Describe the Function in terms of its objective County and City Medical Centers are charged to meet emergency situations such as sudden illness, injury, natural or man-made disasters, and poison cases. The centers do not coordinate their efforts across county and city lines nor do they have exposure to the latest techniques and equipment in the emergency medical field. Some centers are highly successful due to a special innovation that other centers do not share.

Describe the Function in terms of service provided in F. Y. 1976 Utilize a central staff to conduct medical emergency courses around the State to monitor the operations of the Injury Control Program. The courses will provide instruction to the centers on the latest medical emergency techniques and methods. The Base Level provides services for the 100 most populated counties by conducting one medical emergency course at each.

Explain the New or Improved in terms of service Conduct an additional 37 medical emergency courses. This improvement will provide 37 centers with at least 2 courses. The centers serving the greatest population will receive more intensive instruction and more specialized courses. Improved coordination for local services will mean better emergency medical health statewide.

Explain the New or Improved in terms of Cost

Personal Services – Two new positions, including fringes, less one month delayed hiring factor.
Related Expenses – To conduct 37 additional courses, the new positions will need additional expenses and office space rental.
No additional Federal funds are available for expansion.

Quantitative Measures (Effectiveness, Workload, Efficiency)	F. Y. 1976 Function	F. Y. 1977 Cumulative
Different Medical Centers Aided	100	163
Medical Emergency Courses Conducted	100	200
Cost Per Course/Total funds	$445	$423
Cost Per Course/State funds	$245	$289

Package Name: Emergency Medical Health Package 4 of 4

Prepared By: John Smith Activity Rank 14

Positions This Package 2	Function F.Y.76	This Pkg. F.Y.77	Cum%
A. TOTAL PERSONAL SERVICES *	25,624	15,810	229
1. Motor Vehicle Expenses and Repairs	900		
2. Supplies and Materials	1,900	500	
3. Repairs and Maintenance	500		
4. Communications	400	50	
5. Power, Water, Natural Gas	250		
6. Rents *	273	150	
7. Insurance and Bonding			
8. Workmen's Comp. and Indemnities			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	132	88	
13. Other Operating Expenses	450		
14. Extraordinary Expenses			
B. REG. OPERATING EXPENSES(Add 1-14)	4,805	788	141
C. TRAVEL	800	200	175
D. MOTOR VEHICLE EQUIP. PURCH. *	4,680		109
E. PUBLICATIONS AND PRINTING	1,350	100	137
F. EQUIPMENT PURCHASES *	750	100	233
G. PER DIEM AND FEES *	2,000		112
H. COMPUTER CHARGES *	2,900		110
I. OTHER CONTRACTUAL EXPENSE *	1,600		112
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY *			
M. LIST OTHER OBJECTS:			
TOTAL EXPENDITURES (Add A-M)	44,509	16,998	190
FEDERAL FUNDS *	16,000		144
OTHER FUNDS *	4,000		100
STATE GENERAL FUNDS	24,509	16,998	236

* Attach detailed schedule for F. Y. 1977 New or Improved funds requested in this package.

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